

ABSTRACT:

Despite the great importance of *Aureobasidium pullulans* in biotechnology, the fungus had emerged as an opportunistic human pathogen, especially among immunocompromised patients. Clinical detection of this rare human fungal pathogen presently relies on morphology diagnosis which may be misleading. Thus, a sensitive and accurate quantitative molecular assay for *A. pullulans* remains lacking. In this study, we presented the microscopy observations of *A. pullulans* that reveals the phenotypic plasticity of the fungus. *A. pullulans*-specific primers and molecular beacon probes were designed based on the fungal 18S ribosomal RNA (rRNA) gene. Comparison of two probes with varied quencher chemistry, namely BHQ-1 and Tamra, revealed high amplification efficiency of 104% and 108%, respectively. The optimized quantitative real-time PCR (qPCR) assays could detect and quantify up to 1 pg concentration of *A. pullulans* DNA. Both assays displayed satisfactory performance parameters at fast thermal cycling mode. The molecular assay has great potential as a molecular diagnosis tool for early detection of fungal infection caused by *A. pullulans*, which merits future study in clinical diagnosis.